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ABSTRACT

One way to help minority students with limited English proficiency (LEP) achieve a higher level of literacy is to use computers in language arts classes. Word processors now enable the production of software that involves students in text production and manipulation. This development has made it possible to introduce the computer into the classroom as a tool for writing. Spanish-speaking first- and second-grade students were instructed: (1) through the language experience approach and used computers to write their stories; (2) in the language experience approach and used pencil and paper to write their stories; or (3) in a traditional bilingual program. The scores of groups instructed through the language experience approach were higher than those of controls. Vocabulary reading and writing scores of the computer users were significantly higher than scores of those using pencil and paper. Children using computers experimented more with language, edited their stories more, and appeared to read their stories more than children using pencil and paper. Computer users' stories were generally longer than those written with pencil on paper. Generally, findings suggest that word processing has both affective and cognitive advantages for the LEP student. A two-page list of references concludes the document. (RH)

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The Computer: A Tool for Writing with LEP Students

Although there is little debate over the popularity of the microcomputer, there are serious questions directed at its influence on learning (Keith, 1981; Swarden, 1983). The computer has been described as "the most revolutionary tool since chalk" (Rheingold, 1983, p. 37) and as "another gimmick that will steal time from teaching" (Swarden, 1983, p. 5).

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Considerable research has been and is being conducted to study the effects of computer usage in classrooms. However, there is a notable absence of research with regard to children with limited English proficiency (Hersh, 1983; Lipkin, 1983). Limited access to computer interaction by minority language students (Linn & Fisher, 1983) and the prerequisite skill of reading in English required by most computer assisted learning programs (Brookover, 1981) are cited as possible reasons explaining this lack of research.

Such a lack of research is affecting a large segment of our school population. Thirty years ago, 24 of the largest school districts in the nation had English-speaking majorities. By 1980, only two did. This dramatic growth of language minority students is further emphasized by the fact that in 1980 there were more than 50,000 language minority students attending schools where they are a majority of the student body. To understand the impact of these figures, it should be noted that during the period 1976-1982, the number of language minority children increased by 27%, while the number of all other children of school age declined by 13%. If these trends continue for the next few years, nearly a quarter of all school-age children will be language minority by 1990. This growing number of limited English proficient (LEP) students in elementary schools necessitates continued efforts to meet the unique language needs of this population.

To meet the demands of our information-based society (Naisbitt, 1982), the schools today are being required to teach a minimum of two languages to all children - English and "computerese". Long (1984) describes "computerese" as a term associated with computers and information systems. Geisert (1984) states that computer literacy will be as important to today's students as literacy in reading, writing, or math. This injunction has special implications for the LEP student. Language minority students have traditionally had difficulty meeting the school's literacy requirements, and with the addition of computer literacy requirements, these students may fall further behind the students who speak the school's dominate language, English. One way to assist these students to

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achieve a higher level of literacy is to combine computer usage within their language arts classes. Technological literacy may determine the difference between the children who will have the means of economic survival and those who do not (Hersh, 1983). Computer technology offers many advantages for the LEP student to develop both English and computer literacy (Wyatt, 1983).

Teacher attitudes toward computers will play a significant role in the development of a computer environment in the classroom. The presence of computers may invite new learning interactions, but the overall environment must be supportive for important changes to take place (Sheingold, Hawkins, and Char, 1984). Along with teachers' attitudes toward the use of computers, their attitudes regarding who will use the computers must be considered. Computers in elementary schools are frequently set aside for the use of students whom teachers believe will receive the most benefit from their use; namely, the talented and the gifted (Campbell and Gulardo, 1984). However, research on early bilingualism appears to indicate that children learning a second language may be the students who will benefit most from their use (p. 59). As Benderly (1981) notes, bilingual children may be more sensitive to input cues, and, therefore, more adept at the computer. If there is inequitable use of the computer in classrooms, not only may the children's development in computer literacy be hampered, but there may be differences in other academic areas as well.

As children with limited English proficiency become more comfortable with using English as a medium for communication, expressing their ideas in writing will be helpful in their experiencing the relationship of the spoken word to print. For example, it is the opinion of Gonzalez (1982) that Mexican American children are motivated to write. The hindering factor is simply a lack of experience and fluency in English. Therefore, the issue becomes one of addressing ways of tapping potential by reducing fear of or unfamiliarity with English and the writing process.

Historically, the computer has been used primarily to teach math, reading, and component skills of writing, such as spelling and punctuation. Limitations in hardware and software precluded the design of computer interaction that allowed composing activitites. In recent development, the word processor has enabled the production of software that involves the student in actual text production and manipultion (Southwest Regional Laboratory for Educational Research and Development, 1982, p. 13). These advances have made possible the introduction of the computer into the classroom as a tool for writing.

In a recent study (Johnson, 1986), the computer was used in combination with the language experience approach to assist students who were limited in their English proficency to gain familiarity with English and the writing process. This ten-week experimental study included 3 groups of Spanish-speaking first and second graders. In an attempt to insure language equivalency in the three groups, a stratified random sampling technique was used in arranging the following groups: (a) a control group who were taught in a traditional bilingual program; (b) a group taught using the language experience approach and who used pencil and paper for writing their stories; and (c) a group taught using the language experience approach but who used the computer as a tool for writing their stories. All of the students had 40 minutes of daily instruction and the three teachers involved in the study rotated teaching the groups. The study, based on a pretest-posttest design, was conducted to determine the effects of using the computer as a tool for writing within the language experience approach on the vocabulary, reading, and writing of these students.

The statistical findings of the study showed the vocabulary, reading, and writing scores of the two groups using the language experience approach were significantly higher than the scores of the control group. This would seem to indicate the value of using the language experience approach with Spanish-speaking LEP students. Language acquisition was enhanced as the children talked about what was important to them; namely, their prior experiences, their Mexican culture, and their newly shared experiences. Both groups of students who used the language experience approach appeared to be highly motivated as they consistently expressed their desire to write stories.

It was encouraging to note that the statistical findings of the study further indicated that the vocabulary, reading, and writing scores of the group who used the computer as a tool for writing were significantly higher than the scores of the group who used pencil and paper to write their stories.

This study yielded several interesting insights into the effects of using the computer as a tool for writing with young Spanish-speaking LEP students. Linn (1984) noted that using the computer with young children enhances their growth in self esteem and confidence. During the course of this study, the group of students using the computer exhibited a growing confidence in their ability to handle the hardware, to use the word processing package, and to generate hard copies. Growth in self confidence was noted by student comments such as: "I

can boot up my own disk"; "I can write good stories on the computer"; and "I'm going to make copies for my mother, my father, my grandmother, and my teacher. Then I'll read my stories to them"; "My brother says that I can't read, but now I'll show him I can!".

Using the computer seemed to come naturally to the children and they did not appear to be frustrated by a lack of keyboarding skills. Daiute (1985) has noted, also, that the computer allows children the means to write with an ease not always possible with pen and pencil.

The children using the computer experimented more with language and edited their stories more than the group of children who wrote their stories with pencil and paper. The computer allowed the children to delete and change words with ease. The children writing on the computer were observed trying several words to express an idea. Some words were rejected because of spelling problems. Still other changes were made at the suggestion of other children. Referring to the delete key as an "eraser", one student remarked, "I love the computer cuz the eraser doesn't make holes." The children who wrote on the computer frequently deleted several lines and changed the focus of their story. In contrast, the children who wrote with pencil and paper appeared reluctant to make changes.

The children who wrote at the computer appeared to read their stories more as they went along and their stories were generally longer than those written by children using pencil and paper.

The tendency for children to become involved in collaborative writing at the computer has been noted by several authors (Daiute, 1985; Grabe, 1984; Sheingold, 1984; Smith, 1985). The children who participated in this study enjoyed having peer reactions to their stories, and the children generally preferred to work at the computer in pairs. This interaction among the students was very beneficial as the students differed in their level of communicating in English. Although a good deal of the conversations at the computer were conducted in Spanish, the children were of great help to each other in selecting appropriate English words, in sequencing stories, and in suggesting ways to spell needed words.

Statistical findings as well as observational data gathered during this study suggest that word processing has both affective and cognitive advantages to the LEP student The computer, when used as a tool for writing within the language experience approach, appears to be an effective means of communication for language minority students.

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